

*Reprinted from Sankhyā : The Indian Journal of Statistics, Vol. 15, Parts 1 & 2, 1955.*

## MARKET PRICE VERSUS FACTOR COST IN NATIONAL INCOME STATISTICS

*By* RAGNAR FRISCH

*University Institute of Economics, Oslo*

Much has been said in national income literature on the use of "market price" as distinguished from "factor cost" to measure national income. If the problem were only an academic one, we need not pay much attention to it. But in reality it goes much deeper. To put it briefly : If we cut through all phraseology, I think the practice of measuring national income at factor cost is a heritage from the time when only the things done by free enterprise were considered *the real things* and Government and all its doings were considered more or less a nuisance. It is high time that at least those countries where this philosophy has lost its foothold, stop using national income at factor cost as a relevant concept. I shall try to give my reasons for thinking so.

To avoid misunderstanding let me first state certain things against which my criticism is *not* directed.

(1) I have, of course, no objection against the idea that the *unit of measurement* of the various items in the national accounts (or the national budget) may be chosen differently. All values may, for instance, be measured in dollars or in pound sterlings etc. Or one may use *deflated* values in stead of current values. The choice depends essentially on the purpose of the analysis and on the kind of data available.

(2) Nor have I any objection against the idea that the values that enter into the national income, be decomposed into *categories* in some way or another, and a comparison made to find out how large a part *one* specific of these categories or a given *combination* of these categories make up. This idea may be applied to any division

of the values into categories whether the criterion on which the division is performed be "cost" or any other principle. If a well-defined principle of division of values into categories is accepted, and one wants to find out what the amount of any given category is, not only in the national total, but in the corresponding values that emerge in *individual sectors* or *individual products*, then it is necessary to proceed by means of a system of simultaneous linear equations, equal in number to the number of individual sectors or products. Indeed, if several sectors or products are considered, account must be taken of the fact that one sector delivers goods and services to others, and these in turn deliver goods and services to still others. Similar reasoning for a subdivision into products. This decomposition problem is well known to any national income analyst who has approached the problem from the viewpoint of input-output analysis.

For specific purposes of *economic policy* such computations may be quite significant. For instance, how much labour enters into a given kind of product if one takes account not only of the direct use of labour on this product, but also takes account of the indirect use through raw materials etc. ? Or how large a part of the services needed for the production of a given kind of goods is furnished by government, and how large a part by private enterprises ? Or how large a part of these services are paid for by means of cheques and credit instruments, and how large a part is paid for in cash ? Or how much of these services are contained in the price of the product as actually paid in the market, and how much is covered by the government budget ? There is no end to the type of questions of this sort that may be raised. If the division into categories of values is well-defined and a suitable technique for solving the linear equations (or inverting the matrix) is applied, questions of this sort may be answered.

The question of the measuring rod as defined under (1) above is logically *entirely different* from the question of dividing the value items into categories. For any category any of the measuring rods may be used. Some people who use the concept of "factor cost" are perhaps thinking of some sort of special measuring rod. But if they do, the difference between net national product at factor cost and net national product at market price would *disappear* when a deflation is performed. Others may perhaps—more or less unconsciously—think of the concept of factor cost as descriptive of only a part of national income. These ways of thinking and talking are unclear, but after all rather harmless.

Frequently, however, the concept of factor cost is used in a way *which implies much more than this*, and it is against these more far-reaching implications that my objections are directed.

These far-reaching implications are well exemplified in many published works. One of them can serve just as well as another. In one of them it is said : "It would be quite possible, however, to value either an individual firm's output or the total national output at what it *costs* in terms of the factors of production used, rather than

## MARKET PRICE VERSUS FACTOR COST

at what it brings on the market. Such a valuation in terms of factor cost would be more closely related to the utilization of resources in the economy." ... "Tobacco products are heavily taxed, and the manufacturers (in the U.S.) paid over \$1.5 billion in Federal and State excise taxes alone."

Here a number of questions immediately present themselves: What is meant by a factor of production? What is meant by "utilization of resources?" Which resources? Utilization for what purpose? By what sort of criteria or what sort of reasoning can one reach the conclusion that the \$1.5 billion is *not* to be considered as paid to the "factors of production" for the total national output?

There is no other way to give final, meaningful and consistent answers to such questions than by building up the whole system of concepts axiomatically. One of the first things one has to decide upon and state explicitly would then be whether the system of concepts one wishes to use is to be such that "factors of production" mean all humanly controllable things that contribute to the creation of the national product.

If the decision is affirmative, a difference between the concept of net national product at factor cost and at market price can emerge only if one is prepared to maintain that the "factors" do not receive what they have actually produced. There must, then exist some "leisure class" that appropriates part of the national product. It may be some private "leisure class" (in other words some sort of Marxian theory) or it may be Government.

On the other hand, if one wishes to define the system of concepts in such a way that "factors" do *not* include all the humanly controllable things that contribute to the product, one would either be left with an "unexplained part" of national product or one would have to consider two sorts of things that both contribute to the creation of the national product, and both are remunerated and explained, but have nevertheless for some reason or other received different names, one being called "factors" and the other not being called so. In this case it would be quite inappropriate to call net national product at factor cost "national income". It should then be called "that part of national income which goes to those creative elements which I have chosen to term factors". A very explicit statement would then, of course, be needed to explain *why* the creative elements that are selected in this way and termed "factors" are "more closely related to the utilization of resources in the economy" than the other creative elements.

These are the alternatives available for interpreting the meaning of "factor cost" as distinguished from "market price". One has to choose one of these alternatives *and take the consequences*. From the viewpoint of formal logic any of the solutions are, of course, permissible, but an unconditional requirement is that in any case, the solution chosen be clearly described, the premises precisely stated, and a terminology used that does not lead the reader astray. I have a strong feeling that this requirement is not fulfilled in the current literature on "factor cost" and "market price". In particular, the required explanation is certainly not given in the exposition quoted.

I rather suspect that the author had in mind the last of the above alternatives, and that his distinction between those creative elements which he wished to term "factors" and those he did not wish to honour by this name, is drawn according to *the form in which the element in question receives its remuneration*, all creative elements being called "factors" except those that receive their remuneration through the special part of the government budget that has to do with indirect taxes and subsidies and similar items.

If this is the logic at the back of the "factor cost" concept it would be more correct to term the concept *the privately earned part of national income*. Whatever the terminology adopted, if the logic is as here suggested, we are very much in need of an explanation why this particular income concept—the privately earned part of national income—is more realistic, "more closely related to the utilization of resources", than other national income concepts.

To me this whole problem appears in a different light. I think that *whichever* of the above-mentioned logical possibilities one chooses for interpreting the meaning of "factor cost", this concept will not be a fundamental one in an analysis whose basic idea is to consider *the nation as a whole*, including government as a sector equally important to and logically (at least) on the same footing as the private sectors with respect to production. From this global viewpoint the concept of net national product at factor cost does not give, I think, a realistic description of what the nation can consume or invest, and is therefore not "more closely related to the utilization of resources".

In any analysis that really wants to focus its attention on the nation as a whole, the concept of "national income" should be constructed so that it becomes as much as possible indicative of "the result as such", and as little as possible dependent on the organizational form through which the result is obtained and distributed. This is essential both for comparisons between countries with different economic systems and for comparisons of the situations within the same country at different points of time between which the economic organization has changed.

This property certainly does *not* belong to the concept of factor cost. The factor cost figures may be changed so to speak at will simply by shifting to another system of remuneration. To use the example of the excise tax on the products of the tobacco industry, one only has to consider what will happen to the concept of national income at factor cost if the government decided to increase the excise tax on tobacco and to use the proceeds from this increase to finance, say, fundamental biological, agricultural or technical research that makes it possible to lower the cost in the tobacco industry as well as elsewhere; or to use the proceeds for improvements aimed specifically at the tobacco industry (land improvements, highway and railroad construction, etc., that are specifically useful to this industry); or even—as an extreme case—to use the proceeds for paying *the labour force in the tobacco industry* and putting this labour force at the free disposal of the enterprises in this industry. One may visualize a continuous range of such measures, all of which will not lower production in the true sense of the word, but will nevertheless as a pure accounting phenomenon with no

## MARKET PRICE VERSUS FACTOR COST

counterpart in reality, create a tendency to *lower* the figure for net national product at factor cost.

This is not as it should be if the purpose is to construct a national income concept that is as much as possible indicative of "the result as such" and as little as possible dependent on the organizational form through which the result is obtained and distributed. From such a viewpoint the difference between, say, paying a worker directly through a private enterprise, and paying him by way of the government budget, is only a formal one. From this viewpoint it must, therefore, appear as a very fictitious rule to say that when we look through the various expenditure items for an enterprise, those wages that the firm pays *directly* to the workers should *not* be deducted from the national product in order to arrive at the concept of national income (that is, a concept that is "more closely related to the utilization of resources"), while those wages that the firm pays by an accounting procedure that uses the government budget as an intermediate step, *should* be deducted.

To my mind, therefore, the factor cost concept is not an appropriate expression for "national income" if we have in mind the nation as such, the nation as an integrated producing and consuming unit, and we want to bring out the underlying real-economy aspects of this unit, that is to say, those aspects of the problem that are "more closely related to the utilization of resources".

What concept should be used then? In order to make national accounting at all possible some sort of valuation coefficients have, of course, to be introduced. There is one such system that holds, logically, a unique position, namely the system *that is actually in force*, that is to say, that serves as the basis for the current operations and transactions in society at the time when the national income computations are made. This is the system of market prices.

If we take the concept of net national income at market prices and *deflate it* for time variations in the value of the monetary unit (by using an appropriately chosen deflator, or possibly a system of deflators), we have a concept which certainly is not ideal in all respects but is at least vastly superior to the concept of net national income at factor cost. By using deflated market prices we come as near as possible to constructing a measure of "national income" in the real-economy sense of the word.

I must stress that it is here a question only of the *definitional* connections in the system of concepts, that is, of the relations that exist by necessity through the choice of the accounting system. What sort of *structural* repercussions and ramifications of consequences any measure will have (that is, repercussions through its effects on incentives etc.) is, of course, a far-reaching question that cannot be settled by merely studying the definitional relations between the concepts. All we can say when speaking of the definitional system is that this system should be as *neutral* as possible in relation to the problem of comparing the specific structural repercussions.

In the table given in this paper, I have re-arranged the figures for the national income of the United States 1946 in the frame which I would prefer and

## NATIONAL INCOME OF UNITED STATES, 1946

government		enterprises (corporated or unincorporated)	households (labour)	national total (national income at market price)
<b>emerging income</b>				
		income of unincorporated enterprises and rental income of persons	41.8	
		net interest	3.4	
		dividends	5.6	wages and salaries 111.4
		corporate profit tax	9.0	net interest on the public debt to households, say 1.1
net interest on the public debt	-4.4	undistributed profit	7.2	
		inventory valuation adjustment (the writing off on inventories)	-5.0	net total 112.5
		indirect taxes etc. (17.5+0.6-0.9+1.0)	18.2	197.5
		net interest on the public debt to enterprises, say	3.3	
		social insurance contributions	5.9	
		net total	89.4	
<b>earned income</b> (after allowance for <i>indirect</i> taxes and subsidies)				
indirect taxes	17.5	indirect taxes	-17.5	
subsidies	-0.9	subsidies	0.9	
subtotal	16.6	subtotal	-16.6	net total 112.5
emerging income	-4.4	emerging income	89.4	197.5
net total	12.2	net total	72.8	
<b>disposable income</b> (after allowance for <i>all</i> taxes, government transfer payments (relief etc.) and business transfer payments, social insurance contributions, charitable contributions etc.)				
social insurance contributions	5.9	social insurance contributions	-5.9	personal income tax -18.9
corporate profit tax	9.0	corporate profit tax	-9.0	government transfer payments 10.8
personal income tax	18.9	business transfer payment (not including the cancelling of bad debts), say	-0.3	business transfer payments 0.3
government transfer payments (relief etc.)	-10.8			subtotal -7.8
subtotal	23.0	subtotal	-15.2	earned income 112.5
earned income	12.2	earned income	72.8	net total 104.7
net total	35.2	net total	57.6	197.5

## MARKET PRICE VERSUS FACTOR COST

NATIONAL INCOME OF UNITED STATES, 1946 - (Continued)

government	enterprises (corporated or unincorporated)	households (labour)	national total (national income at market price)
<b>goods and services acquired</b> (after allowance for borrowing and lending operations)			
government expenditure on goods and services	consumers' expenditure net investment at home  net total	147.3 14.7 <hr/> 162.0	export surplus 4.7 197.5
30.8			
<b>consumption</b>			
	expenditure on nondurable goods expenditure on services depreciation on households' physical capital, say	87.5 43.6 5.0 <hr/>	
say	net total	136.1	166.9
30.8			
<b>net physical investment at home</b> (net increase in physical capital at home)			
	new construction producers' durable goods net change in inventories	8.9 12.8 4.8 <hr/>	
	subtotal (gross private investment at home) depreciation on private producers' physical capital at home expenditure on durable goods depreciation on households' physical capital, say	26.5 -11.8 16.2 -5.0 <hr/>	
say	net total	25.9	25.9
0			
<b>net financial investment</b> (net increase in cash and claims)			
net total	net total	0.3	4.7
4.4			
			197.5

which is used in our analytical work at the University Institute of Economics, Oslo. In this frame the concept of factor cost is avoided altogether. We find our manner of presentation rather illuminating. The table exhibits the fact that whatever internal transfers are made, leading in each individual sector to the hierarchy of concepts : emerging income, earned income, disposable income, and goods and services acquired, it is all the time *the same global concept* : national income at market prices, that makes up the total.

The sectors can and should, of course, be sub-divided in a more refined way than is done in this simplified example, but this will not affect the principle.

For certain minor items where break-downs were not given in the U.S. data, I have for the purpose of illustration simply split the figures by guessing. These split figures are indicated by the word "say". All other figures are in exact conformity with the official U.S. data.

*Paper received : January, 1955.*